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Assessing the biocompatibility of silver nanoparticles with *Schmidtea mediterranea*, a stem cell model organism

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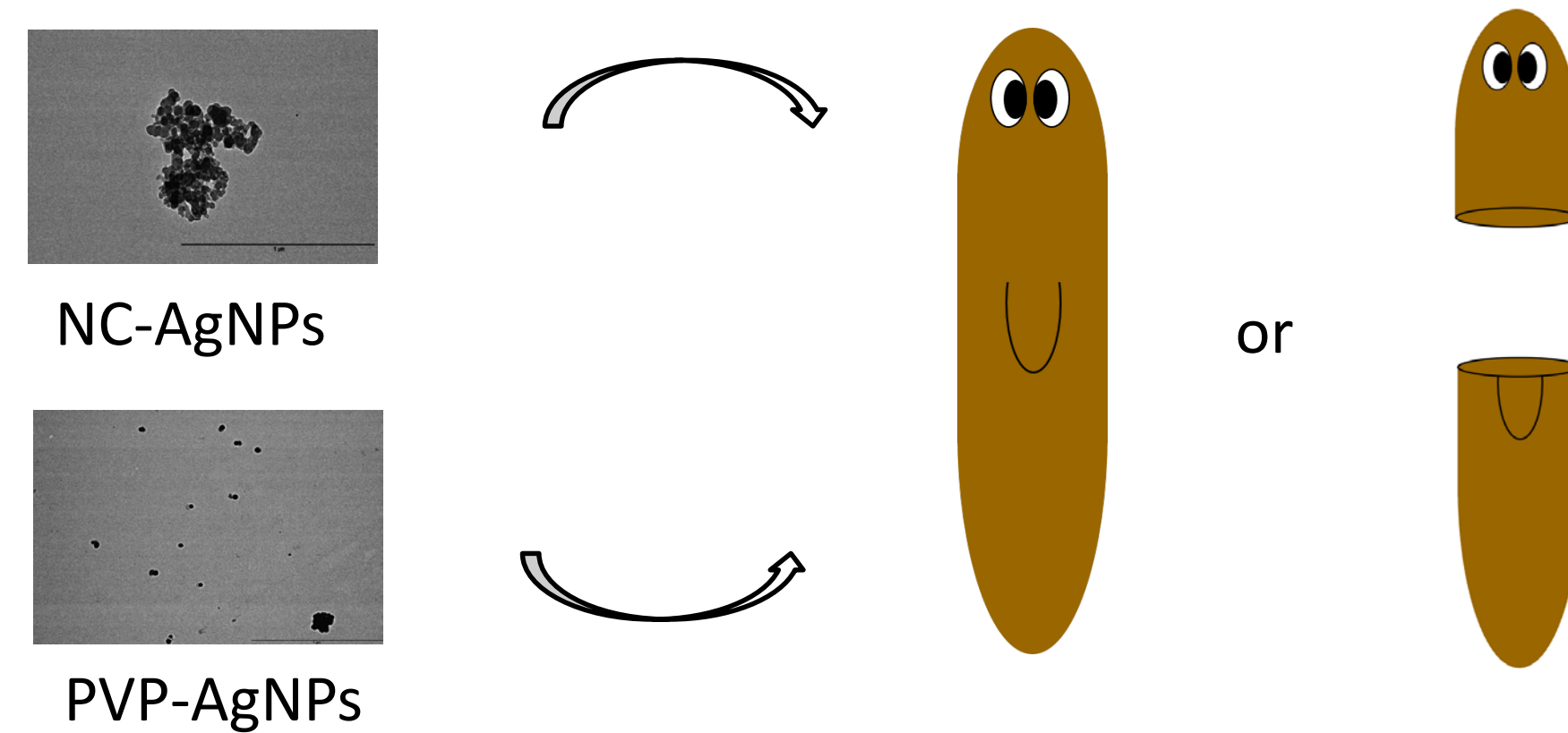
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Introduction:

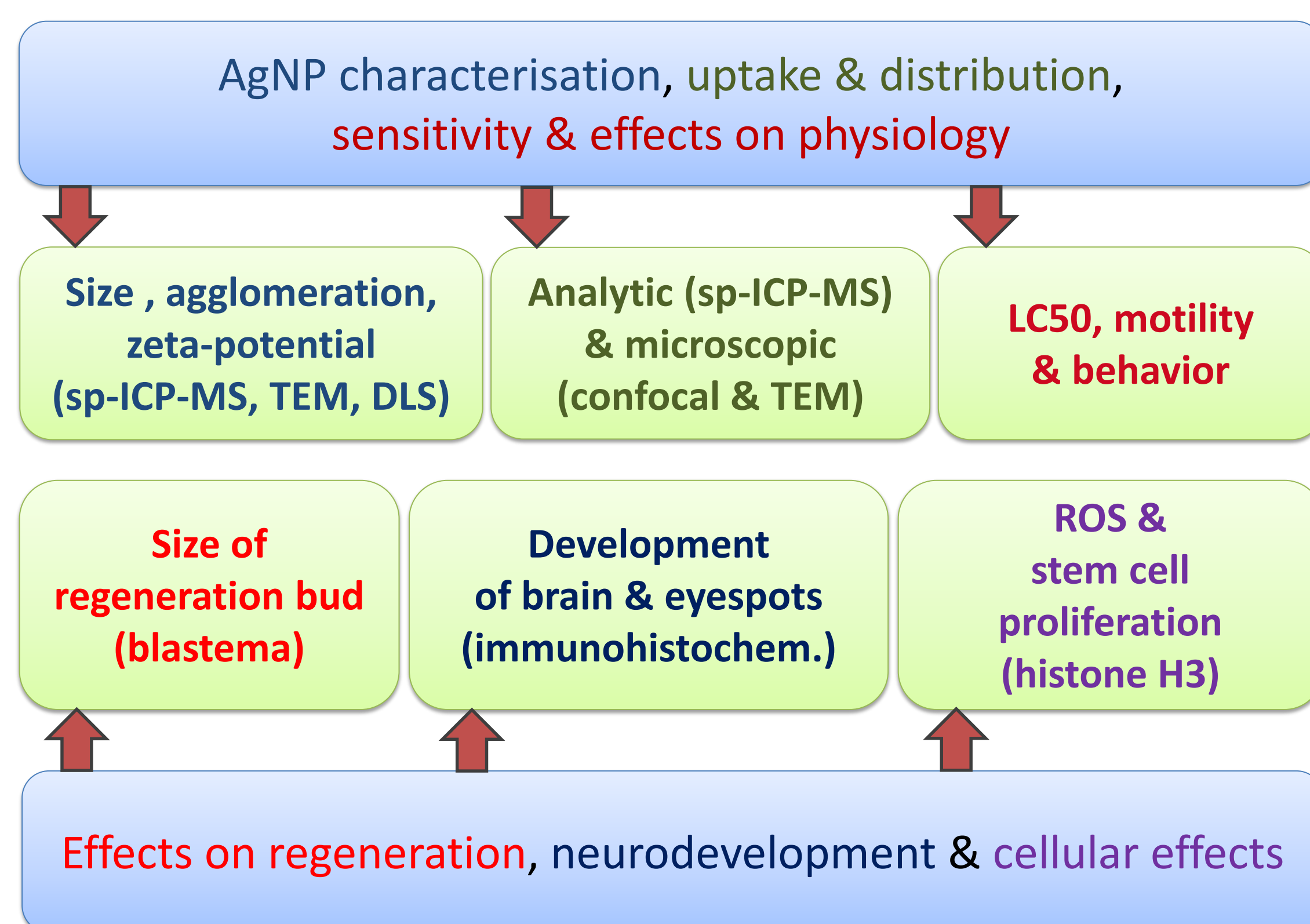
- Silver nanoparticles (AgNPs) are widely used for their antibacterial properties.
- AgNPs have a cyto- and genotoxic potential and can affect different tissues and cell types, including stem cells.
- In-depth knowledge on stem cell toxicology essential in understanding the heterogeneity of toxic responses.

Exposure to silver nanoparticles:

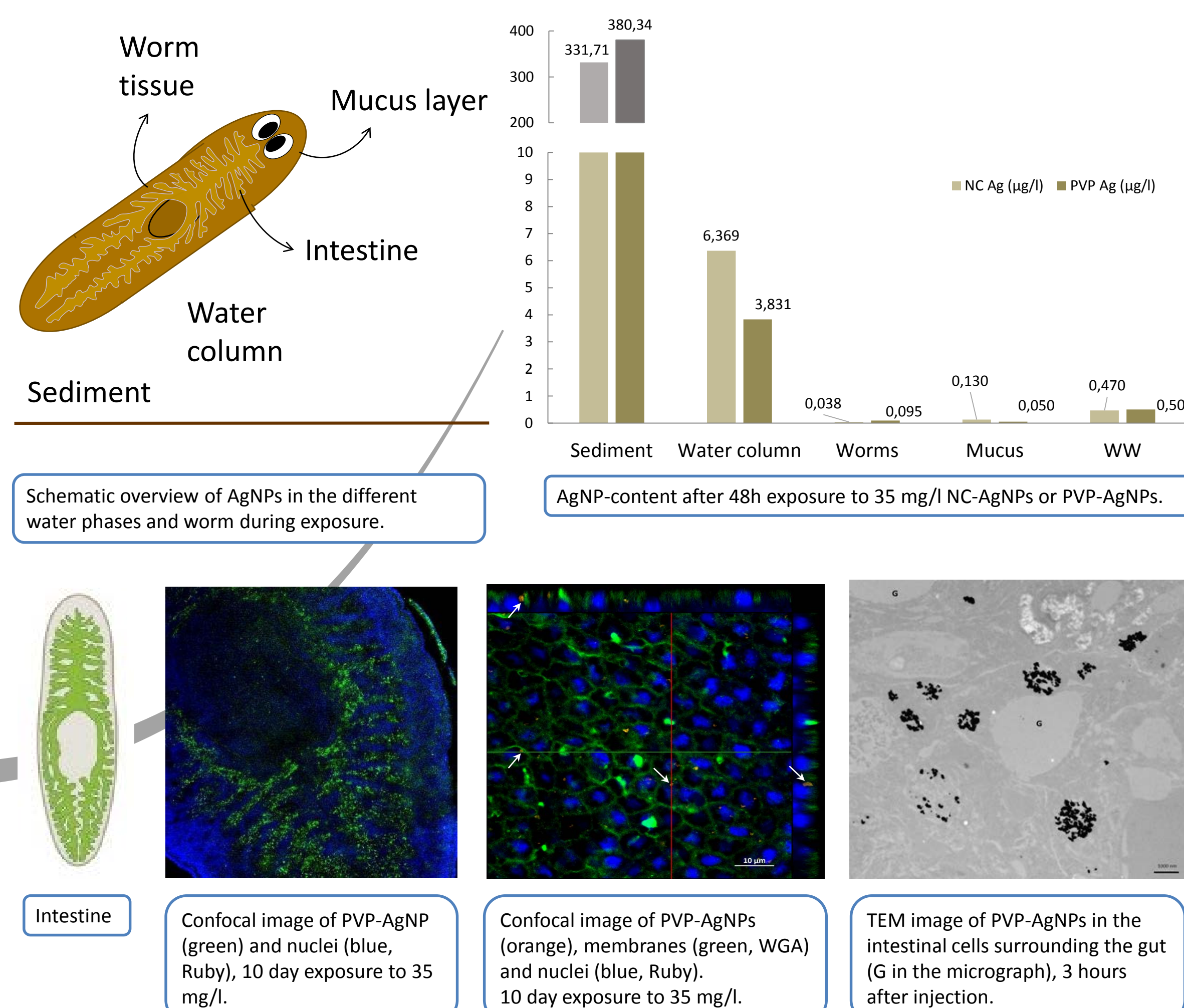
20 nm, non-coated and PVP-coated AgNPs, 10 – 35 mg/l exposed during homeostasis and regeneration.



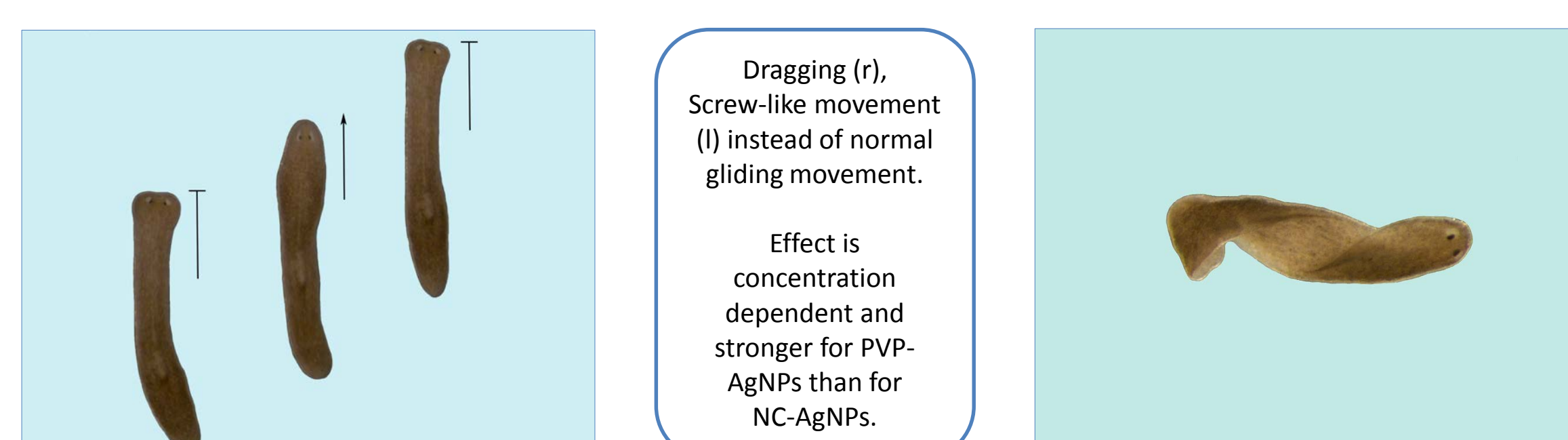
Research methods:



Results: uptake and distribution



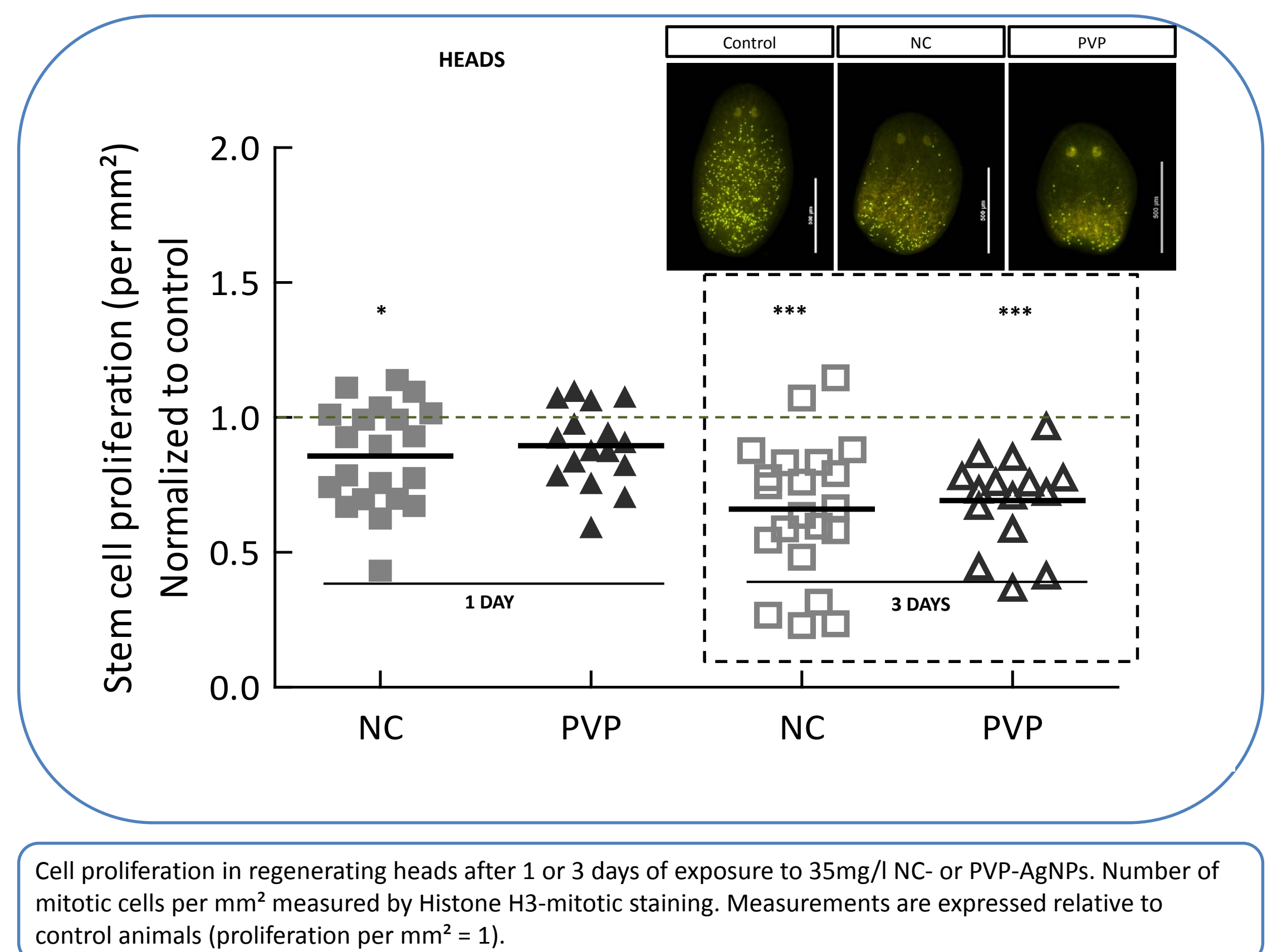
Results: effects on behavior & motility (physiology)



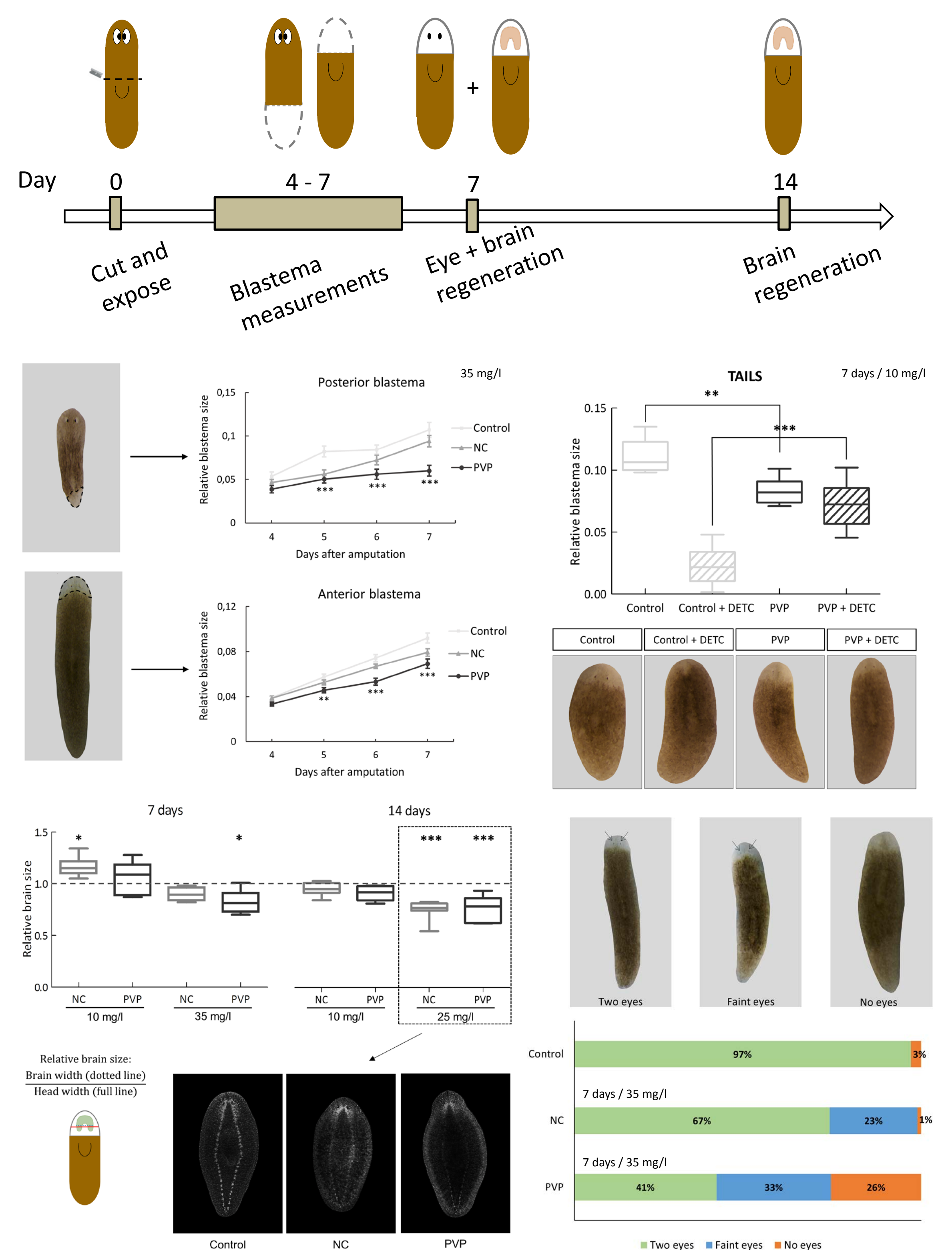
Conclusions:

- Confirmed uptake by our planarian model.
- Variety of physiological effects, stronger for PVP-AgNPs.
- Higher sensitivity of regenerating animals
- General impairment of tissue & nervous system regeneration & development.
- Decreased stem cell proliferation.

Results: effects on stem cell dynamics



Results: effects on regeneration & development:



Effects on blastema size (top left), effects on blastema size under inhibition of SOD (top right). Effects on development of brain (bottom left) and on development of eye spots (bottom right).

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